Entergy

Entergy Operations, Inc.
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Michael Perito
Vice President, Operations
Grand Gulf Nuclear Station
Tel. (601) 437-6409

GNRO-2012/00039

May 23, 2012

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555

SUBJECT: Response to Request for Additional Information (RAI) Dated April 23, 2012
Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
License No. NPF-29

REFERENCE: NRC Letter, "Request for Additional Information for the Review of the Grand Gulf Nuclear Station, License Renewal Application," dated April 23, 2012 (GNRI-2012/00094)

Dear Sir or Madam:

Entergy Operations, Inc is providing, in Attachment 1, the response to the referenced Request for Additional Information (RAI). References requested for docketing in the referenced RAI are included in Attachments 2 – 51. Based on discussion with Nuclear Regulatory Commission staff, it has been requested that each individual reference be assigned an accession number in ADAMS.

This letter contains no new commitments. If you have any questions or require additional information, please contact Christina L. Perino at 601-437-6299.

I declare under penalty of perjury that the foregoing is true and correct. Executed on the 23rd day of May, 2012.

Sincerely,

acting VP-Operations for Michael Perito

Jeremy Browning GMPO GGNS

MP/jas

Attachment(s): (see next page)

A148
NRR

Attachment(s):

1. Response to Request for Additional Information (RAI)
2. Entergy Nuclear Grand Gulf Nuclear Station License Renewal Environmental Audit – Hydrology Patton, - Attachment A labeled "Radial Collector Well Data"
3. Entergy Nuclear Grand Gulf Nuclear Station License Renewal Environmental Audit – Hydrology Patton, - Attachment B labeled "Enercon Study Assessing Groundwater Drawdown and Related Impacts"
4. Entergy Nuclear Grand Gulf Nuclear Station License Renewal Environmental Audit – Hydrology Patton – Attachment D labeled "Well Permits"
5. Entergy Nuclear Grand Gulf Nuclear Station License Renewal Environmental Audit – Hydrology Patton – Attachment E labeled "2005, 2008, 2009 and 2010 Annual Water Use Reports"
6. Entergy Nuclear Grand Gulf Nuclear Station License Renewal Environmental Audit – Hydrology Patton – Attachment I labeled "GGNS NPDES Permit Renewal Application (2007)"
7. Entergy Nuclear Grand Gulf Nuclear Station License Renewal Environmental Audit – Hydrology Patton – Attachment J labeled "GGNS Stormwater Permits"
8. From Diskette Labeled : Entergy Nuclear Grand Gulf Nuclear Station License Renewal Environmental Audit – Hydrology Patton – Attachment K labeled "Condition Reports"
9. Entergy Nuclear Grand Gulf Nuclear Station License Renewal Environmental Audit – Hydrology Patton – Attachment L labeled "Reporting Documentation – Unit 2 Sumps"
10. Entergy Nuclear Grand Gulf Nuclear Station License Renewal Environmental Audit – Hydrology Patton – Attachment P labeled "Thermal Monitoring Procedural Protocols"
11. Entergy Nuclear Grand Gulf Nuclear Station License Renewal Environmental Audit – Hydrology Patton - Attachment Q labeled "Thermal Monitoring Reports for Winter and Summer 2007"
12. ER Reference - GGNS (Grand Gulf Nuclear Station Units 1 and 2). 2003
13. ER Reference - MDEQ. 2010a. Mississippi Department of Environmental Quality, Office of Land and Water Resources, Water Well Drillers, Radial-Search, Wells. Email correspondence from Tommie Whitten MDEQ. September 1, 2010
14. Entergy Nuclear Grand Gulf Nuclear Station License Renewal Environmental Audit – Hydrology Patton - Hydrology Information Needs for the Grand Gulf Nuclear Station (GGNS) License Renewal Environmental Review
15. Entergy Nuclear Grand Gulf Nuclear Station License Renewal Environmental Audit – Hydrology Ford - Attachment A labeled "Groundwater Well Figure"
16. Entergy Nuclear Grand Gulf Nuclear Station License Renewal Environmental Audit – Hydrology Ford - Grand Gulf Nuclear Site Needs List for Hydrology
17. Entergy Nuclear Grand Gulf Nuclear Station License Renewal Environmental Audit – Hydrology Ford - Attachment E "CS&I Annual Drinking Water Quality Report"
18. ER Reference - Bechtel. 1986. Bechtel, Radial Wells 1, 3, 5 - Reduction of Multiple Well Test Data (Geotech Calc G-035). Approved July 31, 1986
19. ER Reference - Entergy. 2008a. Entergy Nuclear Fleet Procedure EN-CY-109, Sampling and Analysis of Groundwater Monitoring Wells, Revision 2. April 1, 2008
20. ER Reference - Entergy. 2008b. Entergy Nuclear Fleet Procedure EN-EV-106, Waste Management Program, Revision 2. August 18, 2008
21. ER Reference - Entergy. 2008h. Entergy Nuclear Waste Minimization Plan, Revision 1. August 4, 2008
22. ER Reference - Entergy 2010e (NPDES CRs)
23. ER Reference - Entergy 2011a (EN-CY-111) "Radiological Ground Water Monitoring Program"

Attachment(s): (continued)

24. ER Reference - Entergy 2011c (EN-EV-112) "Chemical Control Program"
25. ER Reference - GGNS. 2006c. Grand Gulf Nuclear Station, Storm Water Pollution Prevention Plan, Revision 13. July 2006
26. ER Reference - GGNS 2007a (Water Withdrawal Mod), Groundwater Withdrawal Permit Modification Grand Gulf Nuclear Station, Port Gibson, MS
27. ER Reference - GGNS 2007b (2006 WMP Report) Grand Gulf Nuclear Station 2006 Waste Minimization Certified Report
28. ER Reference - GGNS. 2010e. Grand Gulf Nuclear Station, SARA/Title III 2009 Hazardous Chemical Inventory, Correspondence GEXO-2010/00131. February 26, 2010
29. ER Reference - GGNS. 2011j. Site Procedure 08-S-03-10, Chemistry Sampling Program, Revision 48. January 20, 2011
30. ER Reference - GGNS. 2011k. Grand Gulf Nuclear Station, Spill Prevention, Control, and Countermeasure Plan. September 1, 2011
31. ER Reference - MDEQ (Mississippi Department of Environmental Quality). 2007.Correspondence to Rusty Shaw, Entergy Operations, Grand Gulf Nuclear Station, from James Crawford, Mississippi Department of Environmental Quality, Groundwater Withdrawal. October 8, 2007
32. ER Reference - MDEQ 2009a, Records of Public-Supply Wells in Mississippi, 2009
33. ER Reference - MDEQ 2010b Wellhead Protection Areas
34. ER Reference - MDEQ 2011a (NPDES Permit Rationale) Rationale for Reissuance
35. ER Reference - MDEQ 2011b (401 WQC Letter), Mississippi Department of Environmental Quality, Re: Grand Gulf Nuclear Station License Renewal
36. Aquatic Ecology Audit Needs Attachment D: Correspondence to James Thomas, Enercon, from Stephen M. Ricks, Field Supervisor , United States Department of the Interior, Fish and Wildlife Service, Mississippi Field Office, Jackson, MS. February 8, 2010
37. ENSR (ENSR Corporation). 2005. Appendix B, Review of Lower Mississippi Fishes. March 2005
38. ENSR. 2007. Impingement Mortality and Entrainment Characterization Study (IMECS), Entergy –Waterford 3. December 2007
39. MP&L (Mississippi Power & Light Company). 1981. Mississippi Power & Light Company, Middle South Energy, Inc., "Grand Gulf Nuclear Station Units 1 and 2, Final Environmental Report, "Docket Nos. 50-416 and 50-417. December 18, 1981
40. Federal Migratory Bird Depredation Permit (provided as Attachment A on the Terrestrial Ecology response CD)
41. Black Bear Habitat Assessment (provided as Attachment B on the Terrestrial Ecology response CD)
42. Decision Notice And Finding of No Significant Impact Utility Corridor Maintenance for Wildlife Habitat Enhancement and associated Environmental Assessment (provided in Attachment C on the Terrestrial Ecology response CD)
43. ER Reference—GGNS 2007g (2006 Depredation Report)
44. ER Reference—GGNS 2008e (2007 Depredation Report)
45. ER Reference—GGNS 2009g (2008 Depredation Report)
46. ER Reference—GGNS 2010f (2009 Depredation Report)
47. ER Reference—GGNS 2011h (2010 Depredation Report)
48. ER Reference—USDA 1976 (Franklin Line Permit)
49. GGNS. 2008g. Grand Gulf Nuclear Station (GGNS), Facility No. 0420-00023, Renewal of Existing Synthetic Minor Operating Permit No. 0420-00023, Correspondence GEXO-2008/0008. November 25, 2008

Attachment(s): (continued)

50. Enercon. 2011b. Evaluation of Potential Air Emissions from Coal and Natural Gas Fired
51. GGNS. 2004. Air Pollution Control Permit to Operate Air Emissions Equipment at a Synthetic Minor Source, Permit No. 0420-00023. June 1, 2004

cc: with Attachment(s)

Mr. John P. Boska, Project Manager
Plant Licensing Branch I-1
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cc: without Attachment(s)

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NRC Senior Resident Inspector
Grand Gulf Nuclear Station
Port Gibson, MS 39150

Attachment 1 to

GNRO-2012/00039

Response to Request for Additional Information (RAI)

Meteorology and Air Quality

1. Provide most recent 5-year onsite hourly meteorological data from 10-m and 50-m levels of the primary tower in either text or Excel format (years with more than 90% data recovery rate) with data documentation (e.g., data format, units) and wind roses with stability class distributions.

   Entergy Response

   Although only five years of meteorological data was requested, six years are being provided based on discussion with Nuclear Regulatory Commission (NRC) staff. Therefore, hourly meteorological data from the 10-meter and 50-meter levels of the primary tower with greater than 90 percent data recovery from 2006 – 2011 is provided in the following Excel files on the enclosed compact disk (CD):

   - GGNS 2006 Met Data
   - GGNS 2007 Met Data
   - GGNS 2008 Met Data
   - GGNS 2009 Met Data
   - GGNS 2010 Met Data
   - GGNS 2011 Met Data

   Data units associated with the hourly meteorological data are as follows:

   - Wind Direction: degrees
   - Wind Speed: miles per hour
   - Delta-T: degrees Fahrenheit
   - Temperature: degrees Fahrenheit
   - Relative Humidity: percent
   - Precipitation: inches

   Grand Gulf Nuclear Station (GGNS) does not typically develop annual wind rose maps as there is no requirement to do so. Therefore, there is no wind rose map associated with the 2011 meteorological data. However, a 5-year wind rose map (2006 – 2010) was developed in 2011 for site informational purposes and is included in Figure 1.

   For consistency with the years of meteorological data being provided (2006 – 2011), stability class distributions for this same period are included in Table 1.

2. Provide the type of ozone depleting substances (ODSs) used on GGNS in HVAC equipment or air conditioners.

Entergy Response

The type of freons containing ozone depleting substances that are utilized in refrigeration equipment at the GGNS site is as follows:

- Freon 11 (Trichlorofluoromethane)
- Freon 12 (Dichlorodifluoromethane)
- Freon 22 (Chlorodifluoromethane)
- SUVA 123 (2,2-dichloro-1,1,1-trifluoroethane)

Aquatic Ecology

1. Describe surveys of onsite aquatic resources that Entergy has completed since 1973, other than the mussel surveys completed in 2008.

Entergy Response

Based on review of site documents during the development of the GGNS license renewal Environmental Report (ER), there have been no other surveys completed since 1973 other than the 2008 mussel survey that was conducted in conjunction with the GGNS Unit 3 combined operating license application (COLA).

Hydrology/Water Resources

1. Provide available hydrogeologic cross sections through the site area, along with a cross section location map. The cross sections should illustrate monitoring and on-site potable wells, their screen positions, and stratigraphic information.

Entergy Response

The hydrogeologic cross section figures and associated information can be obtained from the GGNS Updated Final Safety Analysis Report (UFSAR) and the GGNS Unit 3 COLA Final Safety Analysis Report (FSAR). NRC has a copy of the most current GGNS UFSAR which was submitted by Entergy on November 30, 2011 (GNRO-2011/00100). In addition, the GGNS Unit 3 COLA FSAR can be obtained from ADAMS, Accession Number ML080640402.

GGNS UFSAR Cross Section Figures

Sections 2.4 and 2.5 of the GGNS UFSAR discuss hydrogeologic conditions that are illustrated by a number of cross section figures referenced in these sections. Figure 2.4-27 shows the location of cross section A-A' for the radial well area along the east bank of the Mississippi River. The stratigraphy along A-A' is shown in the cross section in Figure 2.4-

28. Figure 2.4-27 also shows the location of cross section B-B' that extends from the east bank of the river eastward through the GGNS Unit 1 power block area. Cross section B-B' stratigraphy is shown in Figure 2.4-29.

Figure 2.5-23 identifies the locations of additional cross sections that characterize the upland area of the site. Cross sections are presented in Figures 2.5-24 through 2.5-26. Figures 2.5-38 and 2.5-40 provide section locations in the GGNS Unit 1 power block area, with the profile section stratigraphy being provided in Figures 2.5-41 through 2.5-56.

While boring locations are identified in the location maps and boring depths are included in the various cross sections presented in the UFSAR, the boring numbers do not necessarily match the currently existing well numbering at GGNS. Cross sections incorporating the construction details (well depths and screened intervals) of existing monitoring wells, potable water wells, and other wells have not been developed for GGNS.

GGNS Unit 3 COLA FSAR Cross Section Figures

Hydrogeologic cross sections in an east-west direction through the site area were provided in Figures 2.3-2 and 2.3-3 of GGNS' license renewal ER. These were developed from Figures 2.5.4-224 and 2.5.4-225, respectively, that are included in the GGNS Unit 3 COLA FSAR.

The location of cross section H-H' and I-I' are provided in Figure 2.5.4-216. Figures 2.3-2 and 2.3-3 of the ER illustrate the stratigraphy developed from boring lithologic descriptions along the cross sections H-H' (through the river floodplain east of the Mississippi River to the bluff area) and I-I' (upland area from the bluff through the abandoned Unit 2 power block). Figure 2.5.4-216 also shows the location of cross sections J-J' and K-K'. Cross section stratigraphy along J-J' is illustrated in Figure 2.5.4-226; and cross section stratigraphy along K-K' is illustrated in Figure 2.5.4-227.

As discussed in the GGNS Unit 3 COLA FSAR, the monitoring wells installed during the site characterization for Unit 3 were installed adjacent to the boreholes with the same numerical designation. Cross section H-H' includes the location of B-1043 (where monitoring wells MW-1043A and MW-1043B are located) and B-1045 (MW-1045B). Monitoring wells MW-1023A and MW-1023B are located adjacent to B-1023 which is included in the cross section I-I'. Additional monitoring wells installed during the site characterization for Unit 3 are referenced by their adjacent characterization borings indicated in the other cross sections identified in Figure 2.5.4-215. The cross sections in Figure 2.5.4-215 are in the upland area west of GGNS Unit 1 around the proposed Unit 3 power block. COLA monitoring wells and construction details such as screened intervals are included in the Excel spreadsheet provided in response to Hydrology/Water Resources Request for Additional Information #3 below.

2. Provide a table or spreadsheet of all tritium data for all groundwater monitoring wells (regardless of original purpose or program) and on-site potable wells collected since 2009. Include sampling dates, tritium activity concentrations, detection limits.

Entergy Response

Table 2 presents results of GGNS' groundwater monitoring program associated with the voluntary industry groundwater protection initiative (Nuclear Energy Institute 07-07) from 2009 through February 2012. Only tritium results from wells that were actually sampled are shown from year to year in Table 2. Table 3 presents groundwater sampling results associated with the GGNS radiological environmental monitoring program that is conducted in accordance with Table 6.12.1-1 of the GGNS Offsite Dose Calculation Manual from 2009 through April 2012.

3. Provide a table or spreadsheet of all groundwater monitoring wells (regardless of original purpose or program) and on-site potable wells documenting, their coordinates, the depths and elevations of the well screens, and the hydrogeologic units they monitor, as well as a map showing each well location, if available.

Entergy Response

A spreadsheet identifying the Mississippi State Plane Northing and Easting coordinates, depths and elevations of the well screens, and the hydrogeologic units in which the wells are screened for onsite groundwater wells in the upland area is provided as an Excel file labeled "GGNS Well Summary Table" on the enclosed CD.

Wells installed at GGNS over various time periods have been screened in the upper three hydrogeologic units in which groundwater occurrence has been identified. These units include the Loess, the Upland Complex (terrace deposits), and the upper portion of the Catahoula Formation. For wells installed in the Upland Complex as shown in the Excel spreadsheet, Figure 2 provides the location of these wells. Figure 2 also provides a potentiometric surface of the water table aquifer in the Upland Complex developed from measurement of water levels in select wells on July 11, 2011. For wells that were installed in the Loess ("A" series wells) and Catahoula ("C" series wells) as shown in the Excel spreadsheet, Figure 3 provides the location of these wells. Potentiometric surface mapping has not been completed for groundwater in the Loess and Catahoula Formations due to the limited occurrence of groundwater in the "A" series of wells, and limited monitoring points and water level measurements in the "C" series of wells.

4. Provide a map of outfall locations.

Entergy Response

Permitted outfalls identified in GGNS National Pollutant Discharge Elimination System (NPDES) Permit MS00029521 are provided in Figure 4.

Table 1

Stability Class Distributions

2006 Grand Gulf Meteorological Data				
Stability	**Class**	**Delta-T Range (F)**	**Occurrences (Hours)**	**%**
Extremely Unstable	A	<-1.36	151	1.7
Moderately Unstable	B	-1.36<DT<-1.21	235	2.7
Slightly Unstable	C	-1.21<DT<-1.07	495	5.6
Neutral	D	-1.07<DT<-0.35	2687	30.7
Slightly Stable	E	-0.35<DT<1.09	2741	31.3
Moderately Stable	F	1.09<DT<2.89	1036	11.8
Extremely Stable	G	>2.88	1162	13.3
Missing	M	NA	253	2.9
2007 Grand Gulf Meteorological Data				
Stability	**Class**	**Delta-T Range (F)**	**Occurrences (Hours)**	**%**
Extremely Unstable	A	<-1.36	122	1.4
Moderately Unstable	B	-1.36<DT<-1.21	192	2.2
Slightly Unstable	C	-1.21<DT<-1.07	433	4.9
Neutral	D	-1.07<DT<-0.35	2812	32.1
Slightly Stable	E	-0.35<DT<1.09	2820	32.2
Moderately Stable	F	1.09<DT<2.89	1050	12.0
Extremely Stable	G	>2.88	1251	14.3
Missing	M	NA	80	0.9
2008 Grand Gulf Meteorological Data				
Stability	**Class**	**Delta-T Range (F)**	**Occurrences (Hours)**	**%**
Extremely Unstable	A	<-1.36	629	7.2
Moderately Unstable	B	-1.36<DT<-1.21	503	5.8
Slightly Unstable	C	-1.21<DT<-1.07	569	6.5
Neutral	D	-1.07<DT<-0.35	2825	32.3
Slightly Stable	E	-0.35<DT<1.09	2340	26.8
Moderately Stable	F	1.09<DT<2.89	769	8.8
Extremely Stable	G	>2.88	1101	12.6
Missing	M	NA	48	<0.1

Table 1

Stability Class Distributions

2009 Grand Gulf Meteorological Data				
Stability	**Class**	**Delta-T Range (F)**	**Occurrences (Hours)**	**%**
Extremely Unstable	A	≤-1.37	1223	14.3
Moderately Unstable	B	-1.37<DT≤-1.23	592	6.9
Slightly Unstable	C	-1.23<DT≤-1.09	597	7.0
Neutral	D	-1.09<DT≤-0.37	2481	29.1
Slightly Stable	E	-0.37<DT≤1.08	1983	23.2
Moderately Stable	F	1.08<DT≤2.88	716	8.4
Extremely Stable	G	>2.88	942	11.1
Missing	M	NA	224	2.6
2010 Grand Gulf Meteorological Data				
Stability	**Class**	**Delta-T Range (F)**	**Occurrences (Hours)**	**%**
Extremely Unstable	A	≤-1.37	1969	22.5
Moderately Unstable	B	-1.37<DT≤-1.23	450	5.1
Slightly Unstable	C	-1.23<DT≤-1.09	569	6.5
Neutral	D	-1.09<DT≤-0.37	2097	24.1
Slightly Stable	E	-0.37<DT≤1.08	1500	17.2
Moderately Stable	F	1.08<DT≤2.88	776	8.9
Extremely Stable	G	>2.88	1373	15.7
Missing	M	NA	26	0.3
2011 Grand Gulf Meteorological Data				
Stability	**Class**	**Delta-T Range (F)**	**Occurrences (Hours)**	**%**
Extremely Unstable	A	≤-1.37	1358	15.5
Moderately Unstable	B	-1.37<DT≤-1.23	590	6.7
Slightly Unstable	C	-1.23<DT≤-1.09	515	5.9
Neutral	D	-1.09<DT≤-0.37	2360	26.9
Slightly Stable	E	-0.37<DT≤1.08	2194	25.0
Moderately Stable	F	1.08<DT≤2.88	744	8.5
Extremely Stable	G	>2.88	980	11.2
Missing	M	NA	19	0.2

Table 2

Industry Groundwater Protection Initiative Monitoring Results

2009 GGNS Groundwater Tritium Monitoring Results (pCi/l)				
Well	**01-09**	**05-09**	**08-09**	**12-09**
MW-1020B	<587	<569	<580	<566
MW-1026B	<586	<569	<580	<564
MW-1027B	<588	<573	<587	<556
MW-1134B	<590	<571	<585	<562

Table 2

Industry Groundwater Protection Initiative Monitoring Results

2010 GGNS Groundwater Tritium Monitoring Results (pCi/l)									
Well	**02-10**	**03-10**	**05-10**	**06-10**	**08-10**	**09-10**	**10-10**	**11-10**	**12-10**
DW-01							10,533	3,990	4,722
DW-03		719	<472		520			545	
DW-04			<492		753			895	
DW-05					<515			<414	
DW-07					2,106	2,992	2,863	3,273	
DW-08					<426			<373	
MW-01						973	686	<414	
MW-06						741	713	666	
MW-07			1,639	1,731	2,571	2,760	6,900	2,027	10,687
MW-09		<527	<498		<511			<397	
MW-14		<524	<498		<402			<398	
MW-23		<527	<500		<511			<414	
MW-26			<500		<534			<400	
MW-102B								<413	
MW-1020B	<581								
MW-1026B	<583		<491		<544			<400	
MW-1027B	<573		<490		<513			<412	
MW-1134B	<581	<525	<476		<506			<400	
MW-1043B		294	<487		<515			<414	
MW-1045B			<493		<513			<399	
OW-202				<506					
OW-209B			3,698	4,230	3,257	6,242	6,202	6,813	7,344

Table 2

Industry Groundwater Protection Initiative Monitoring Results

2011 GGNS Groundwater Tritium Monitoring Results (pCi/l)										
Well	**01-11**	**03-11**	**04-11**	**05-11**	**06-11**	**07-11**	**08-11**	**09-11**	**11-11**	**12-11**
DW-01	8,497	11,600	10,423	10,923	12,565	17,108	19,519	21,100		14,300
DW-03		659	888	<421			738		636	
DW-04		1,287	1,109	775	776	873	1,207		822	
DW-05		<407	<643	<426	<425		<659		<319	
DW-07	3,603	3,164	2,844	2,495	2,299	2,110	2,939		4,430	
DW-08		<374	<455							
MW-01	<372	<410	<445	<423			814		<389	
MW-02					522					
MW-07	7,135	10,000					17,404			
MW-09		<393	653	<661			<660		<318	
MW-10						<404				
MW-14		<385	<622	<605			<674		<309	
MW-18						<405				
MW-23		<377	540	<423			<649		<388	
MW-26		<412	<638	<604			<662		<321	
MW-100B	<423	<382	<650	<622			<661		<318	
MW-102B	<424	<441	<648	<645			<661		378	
MW-103B					<426		639		<312	
MW-104B					<429		<660		<384	

Table 2

Industry Groundwater Protection Initiative Monitoring Results

2011 GGNS Groundwater Tritium Monitoring Results (pCi/l)										
Well	**01-11**	**03-11**	**04-11**	**05-11**	**06-11**	**07-11**	**08-11**	**09-11**	**11-11**	**12-11**
MW-105B				<646	773	873	765	1,040		716
MW-106B	<474	<438	<647	<649			<662		<308	
MW-107B	1,935	2,114	2,341	2,088	2,355	2,293	1,913		2,200	
MW-108B						1,012	931		944	
MW-109B	759	880	985	725			1,266		674	
MW-110B	<421		<626	<647			<661		<316	
MW-111B				5,459	5,010	3,921	4,457	6,260		5,780
MW-112B					<403	<408	<630	<272		<318
MW-113B					<429	<409	<660		<304	
MW-114B					437	808	735	965	929	1,630
MW-115B									1,250	927
MW-118B									<363	<316
MW-1007C			<652							
MW-1009C				<624						
MW-1012C				<626						
MW-1020C			<626							
MW-1024C			<667							
MW-1026B		<445	<648	<621			<663		<315	
MW-1027B		<440	<648	<602			<650		<374	

Table 2

Industry Groundwater Protection Initiative Monitoring Results

2011 GGNS Groundwater Tritium Monitoring Results (pCi/l)										
Well	**01-11**	**03-11**	**04-11**	**05-11**	**06-11**	**07-11**	**08-11**	**09-11**	**11-11**	**12-11**
MW-1027C			<626							
MW-1042C			<649							
MW-1043B		<409	<647	<604			<638		<391	
MW-1045B		<382	<624	<604			<639		<314	
MW-1082C			<625							
MW-1134B		<488	<645	<605			<662		<313	
MW-1134C			<625							
OW-209B	7,774	8,040	7,062	7,298	6,732	6,757	6,308	6,320		5,930
SW-103B									<357	

Table 2

Industry Groundwater Protection Initiative Monitoring Results

2012 GGNS Groundwater Tritium Monitoring Results (pCi/l)		
Well	**01-12**	**02-12**
DW-01		17,800
MW-01		<239
MW-08		<326
MW-09		<234
MW-23		313
MW-100B		<234
MW-102B		<238
MW-103B		<235
MW-104B		<235
MW-105B		740
MW-106B		<235
MW-107B		3,430
MW-108B		612
MW-109B		699
MW-110B		<229
MW-111B	10,100	
MW-112B		<229
MW-113B		356
MW-114B		2,340
MW-115B		5,630
MW-118B	491	
OW-209B		5,980
SW-103B		<366

Table 3

Radiological Environmental Monitoring Program Results [a]

2009 – April 2012 Groundwater Tritium Monitoring Results (pCi/l)												
Well	**12-09**	**03-10**	**06-10**	**09-10**	**11-10**	**03-11**	**04-11**	**07-11**	**09-11**	**12-11**	**03-12**	**04-12**
CONSTWELL	<630									<692		
CONSTWELL1		<582	<480	738	<373	<388		<423	<637		<707	
CONSTWELL3		<581	<479	<407	<371	<389		<423	<637		<709	
CONSTWELL4		<579	<477	<408	<368	<392					<708	
PGWELL	<633			<445	<348		<388	<420	<642	<692		<636

a. CONSTWELL (indicator location) represents GGNS onsite potable water wells; PGWELL (control location) represents the Town of Port Gibson wells.

Figure 1

GGNS 5-year Wind Rose 2006-2010 (10 Meter)

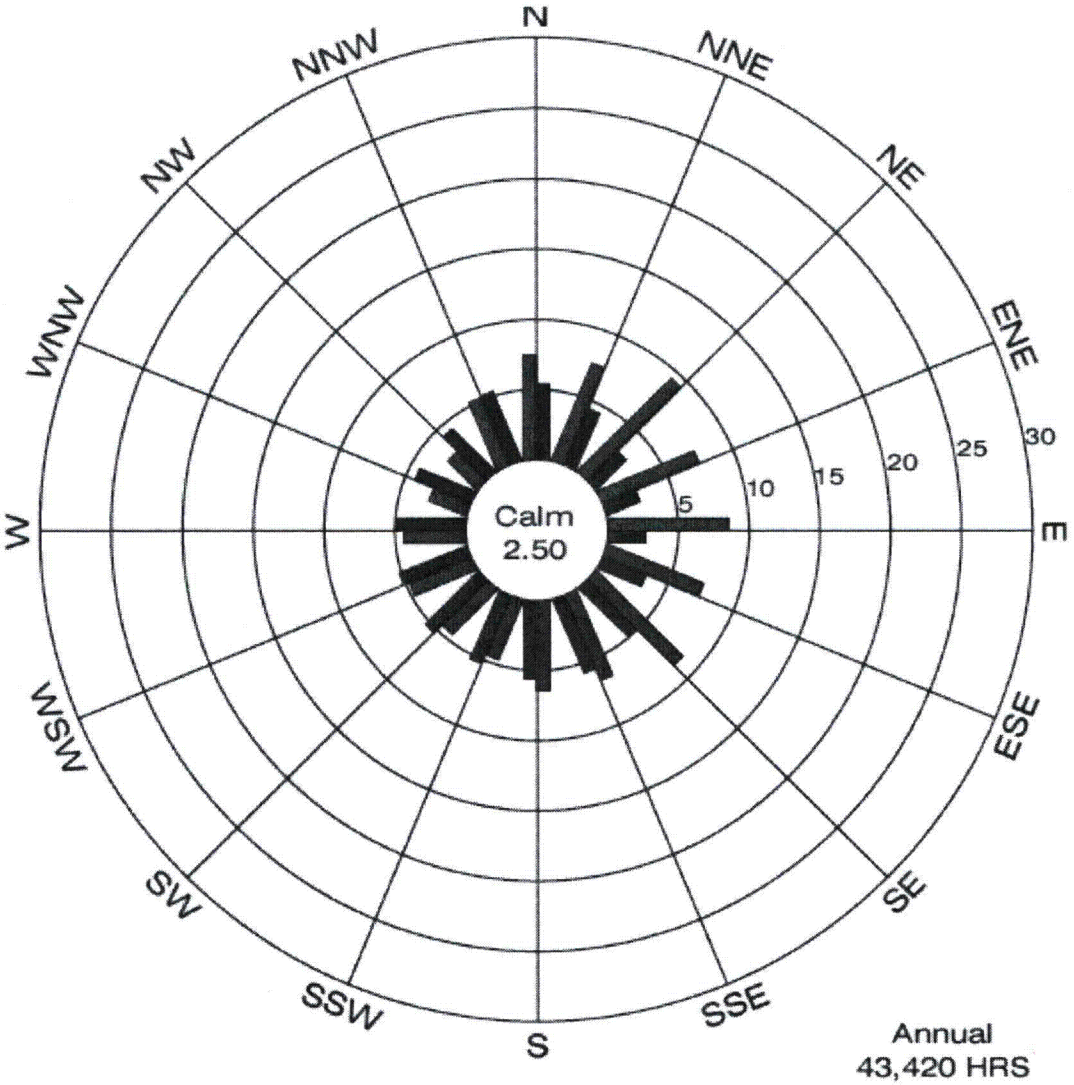
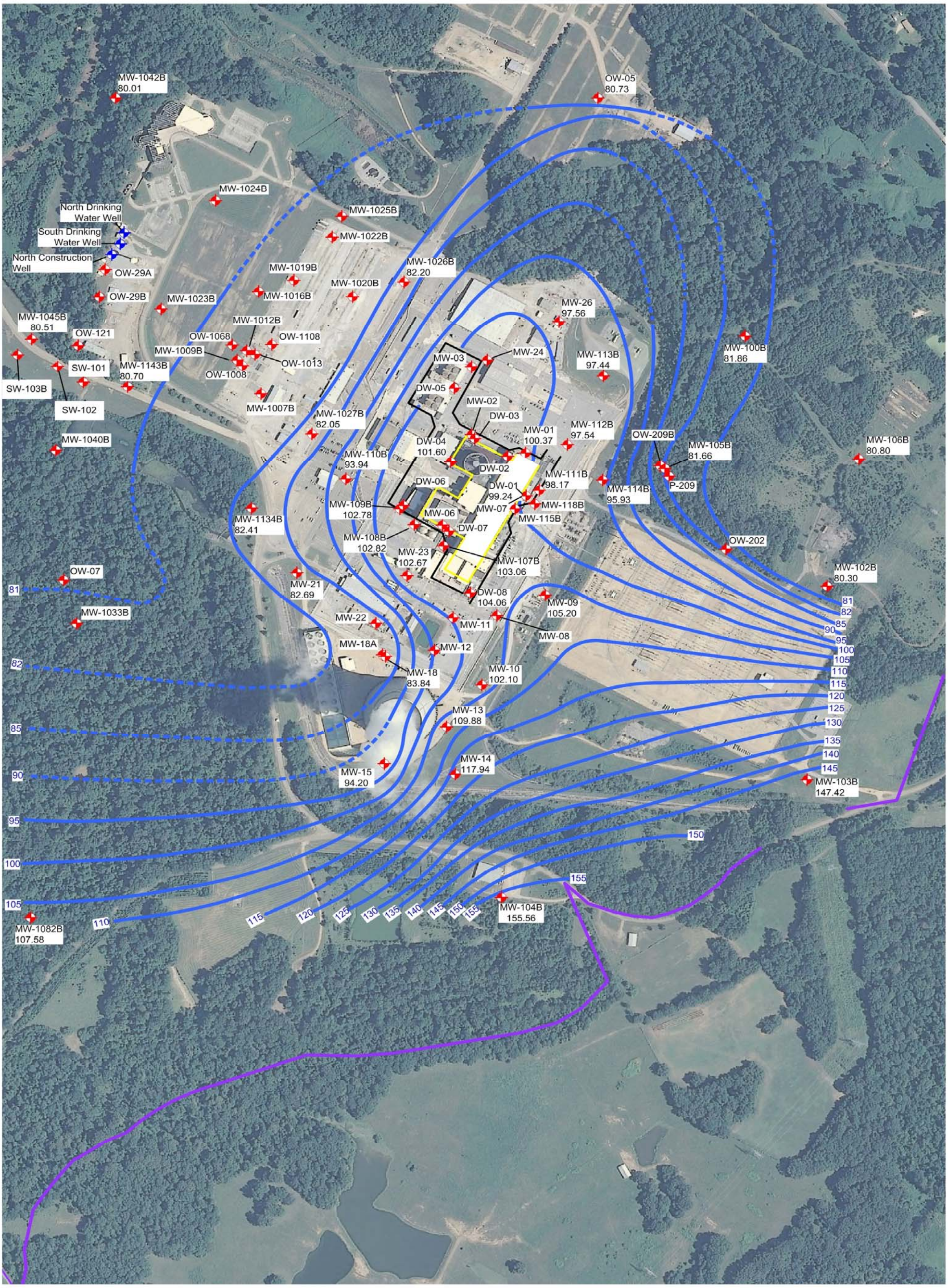


Figure 2 Wells Installed in Upland Complex Formation



Legend

- Groundwater Well Installations
- Production Wells
- Potentiometric Surface Elevation
- Approximate Property Boundary
- Approximate Power Block
- Approximate Tie Back Wall

Grand Gulf Nuclear Station
Potentiometric Surface Map
Upland Complex/Terrace Deposits
July 11, 2011

Not To Scale

BASEMAP SOURCE
NAIP 2009
CLAIRBORNE COUNTY, MS

By: JWS
Date: 04/20/2012

N

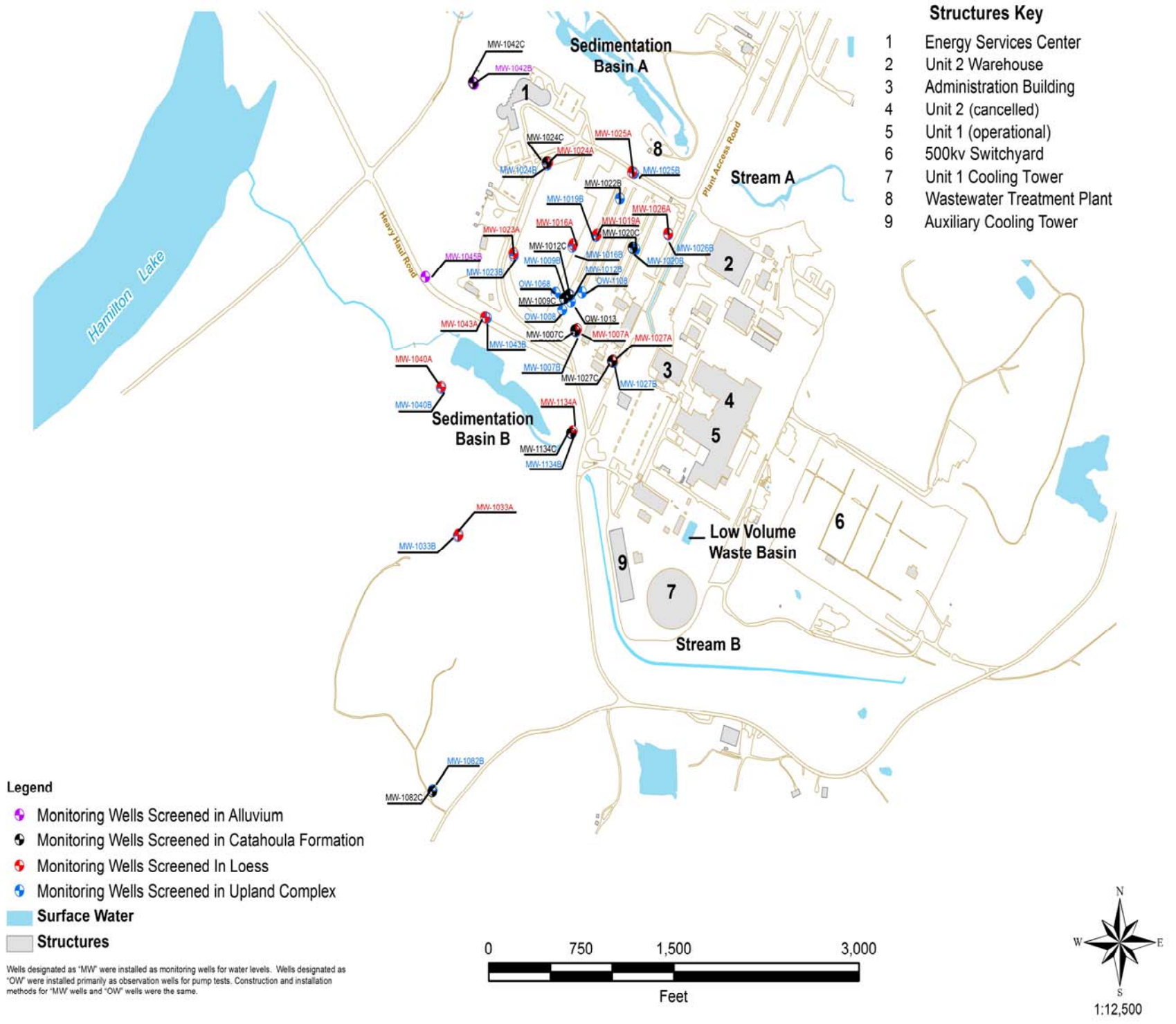


Figure 3 Wells Installed in Loess and Catahoula Formations

Figure 4

GGNS NPDES Permit MS00029521 Outfalls